

Claims

- 1 1. A method of recovering transmitted symbols in the receiver of a spread spectrum
2 system, comprising: receiving a signal including multi-path components associated with a
3 transmitted symbol; de-spreading successive portions of the received signal to provide a
4 symbol estimate based on each multi-path, wherein at least one multi-path of the
5 transmitted symbol is contained in separate portions, the de-spreading step further
6 comprising determining a partial estimate of the transmitted symbol for the at least one
7 multi-path component based on each part of the multi-path contained in each separate
8 portion; and summing said partial estimates.

- 1 2. The method of claim 1 further comprising the step, after de-spreading each portion,
2 of storing any partial estimates.

- 1 3. The method of claim 2 further comprising the step, on de-spreading each portion, of
2 retrieving any stored partial estimate associated with a multi-path in the current portion.

- 1 4. The method of claim 3 wherein the retrieved partial estimate is used in the summing
2 step.

- 1 5. The method of of claim 1 further including the step of sampling the received signal
2 at successive time intervals thereby generating the successive portions of the received
3 signal.

- 1 6. The method of claim 5 further comprising the step of estimating a timing error of
2 the received signal, wherein the successive portions of the received signal are time
3 adjusted to compensate for the timing error prior to de-spreading.

- 1 7. The method of claim 6 wherein the successive portions of the received signal are
2 stored in a sample memory.

1 8. The method of claim 7 wherein the successive portions of the received signal have a
2 length of more than one symbol period.

1 9. The method claim 8 wherein the successive portions of the received signal have a
2 length of two symbol periods.

1 10. In a receiver of a spread spectrum communication system, circuitry for recovering
2 transmitted symbols, comprising: sample circuitry, connected to input a received signal
3 including multi-path components of at least one symbol, for sampling successive portions
4 of the received signal; de-spreading circuitry, connected to receive the successive
5 portions of the received signal and for outputting , wherein at least one multi-path of the
6 transmitted symbol is contained in separate portions; determining a partial estimate of the
7 transmitted symbol for the at least one multi-path component based on each part of the
8 multi-path contained in each separate portion; and summing circuitry for summing said
9 partial estimated to produce a full estimate.

1 11. The circuitry of claim 10 further including a memory for storing the partial
2 estimates, wherein at the end of each successive portion of the received signal any partial
3 estimates are stored in said memory.

1 12. The circuitry of claim 11 further including a symbol memory, wherein each full
2 estimate is stored in the symbol memory.

1 13. The circuitry of any claim 12 wherein the sample circuitry includes a sample
2 memory, wherein the successive portions of the received signal are stored in the sample
3 memory.

1 14. The circuitry of claim 13, further including timing error detection and estimation
2 circuitry for determining an error in the timing position of the received signal, wherein
3 the timing position of the received signal is adjusted responsive to said error prior to de-
4 spreading.